OK to enter 03/03/05

AMENDMENTS TO THE SPECIFICATION

Please replace Paragraph 0023 with the following rewritten paragraph:

-- Alternatively, the thermocouple can comprise a thermocouple film deposited on the base dielectric film and extending beyond an edge of the base dielectric film to form a thermocouple junction with the substrate when such substrate comprises an electrically conducting material. For example, Figure 9 shows a perspective view of such an embodiment of the present invention. Base film 10 comprising a dielectric material is disposed on substrate 20. Thermocouple film 30 is disposed on base film 10 and extends beyond edge 12 of base film 10 to contact substrate 20 and forms thermocouple junction 50 with substrate 20. --

Please insert the following paragraph immediately after Paragraph 0019:

-- Figure 9 shows a perspective view of an embodiment of the present invention wherein an electrically conducting film is extended beyond an edge of the base dielectric film to form a thermocouple junction with the base metal substrate. --

OK to enter 03/03/05 cw

AMENDMENTS TO THE SPECIFICATION

Please amend Paragraph 0034 to read as follows:

-- EXAMPLE: The manufacture of a Pt/Pt-Rh film thermocouple is described in the immediately following paragraph. --

OK to enter 03/03/05

AMENDMENT TO THE SPECIFICATION

Please amend Paragraph 0032 to read as follows:

-- Figure 7 is a schematic diagram of an embodiment wherein thermocouple assemblages of the present invention are used to monitor turbine blades of a gas turbine engine. Although Figure 7 illustrates the application of the present invention to monitoring turbine blades, the condition of other turbine engine components also can be monitored with a similar system. Thermocouple assemblages 100 are disposed on the superalloy substrate of turbine blades 110 and electrically coupled to a measurement center 130. In addition, one or more other devices 106 may be disposed on turbine blades 110 to measure other conditions thereof. For example, device 106 may be a film strain sensor deposited on thermal barrier coating and/or the superalloy substrate to measure the magnitude of the expansion of thermal barrier coating and/or the superalloy substrate. Such disposition of strain sensors also can provide information on any irreversible strain of the thermal barrier coating and/or the superalloy substrate. Film strain sensors 106 may be fabricated using the method described above for film thermocouples. In this case, a change in the resistance of a film of a metallic material is typically measured to determine the magnitude of the strain exhibited by the component to which the film adheres. Thus, a means for measuring the change in the property of the film of the metallic material (electrically conducting material) in this case can be, for example, a meter for measuring electrical resistance (popularly known as an ohmmeter). A communication link 140 is disposed to transmit the temperature measurement made by thermocouple assemblages 100 to a remote user. A thermoelectric generator 150 provides power to operate measurement center 130 and communication link 140. Communication link 140 may be hard-wired or wireless telecommunication links that can be, but are not limited to, telephone lines with associated modems, radio frequency, microwave, satellite transmission, or combinations thereof. Thus, a remote user at a central station can simultaneously monitor the conditions of components of multiple turbine engines. Using wireless communication links, the user can monitor turbine engines that are not at fixed locations, such as those of airplanes. The central station can include devices for receiving signals transmitted from the remote turbines, converting signals to data, analyzing, presenting data, generating reports, etc. Such a central station can include one or more digital computers to perform these functions.
--